

GOLD

By John M. Lucas

World gold production declined in 1994. The Republic of South Africa remained the world's largest gold producing nation, followed, despite a slight decline in production, by the United States, which has been the second largest producer since 1991 when its production, for the first time in nearly five decades, surpassed that of the former Soviet Union. Nevada, followed by California, continued to be the dominant gold-producing States, where combined output for 1994 accounted for nearly 75% of the U.S. total. Though most domestic gold mines were surface or open pit operations, conversion to underground methods had begun to accelerate as more near-surface deposits reached depletion. Some of the deeper deposits, accessible only by underground methods, contain higher grade sulfide ores which require more extensive preparation than ores encountered in most near-surface operations. Although most of the Nation's gold mines were in Western States, a few continued to operate in States east of the Mississippi River. Gold also was produced at a dozen or more large placer mines, nearly all in Alaska, and numerous small placer mines, mostly in Alaska and Western States. A small amount of domestic gold also was produced as a byproduct of processing the ores of base metals, chiefly copper. Twenty-five mines yielded 80% of the gold produced. The value of U.S. gold mine production in 1994 was more than \$4 billion.

Domestic gold exploration activity, which generally peaked during the late 1980's, continued to decline, as mining companies pursued opportunities in other nations. In several Latin American nations, for example, favorable geology, combined with recently liberalized mining regulations attracted an influx of United States and other foreign gold exploration and development spending. Recent overseas exploration interest and spending by U.S. firms also was directed toward various western Pacific regions and several areas of the former Soviet Union.

Conversion of old gold scrap to refined gold provided about 74 metric tons (4.7 million troy ounces¹) of metal to the market, a quantity equivalent to nearly all domestic gold consumption. The balance of secondary production, 73 tons, was from prompt industrial scrap, partly toll refined.

Commercial-grade refined gold came from about 2 dozen producers. A few dozen companies, out of several thousand companies and artisans, dominated the fabrication of gold into useful products. Nearly all jewelry manufacturing was centered in the New York, NY, and Providence, RI, areas. Estimated uses in 1994 were as follows: jewelry and arts, 70%; industrial (mainly electronics), 23%; and dental, 7%.

The Engelhard Industries/London daily price of gold ranged from a low of about \$370 per troy ounce on April 22, to a high of nearly \$398 on September 28. The average for the year was about \$385. The previous year's prices ranged from about \$327 to \$407 and averaged about \$361.

Identified world gold resources at yearend 1994 were estimated by the U.S. Geological Survey at 75,000 tons, of which 15% to 20% was byproduct resources. The world reserve base was estimated by the U.S. Bureau of Mines (USBM) at 60,000 tons and reserves at 44,000 tons. The Republic of South Africa had about one-half of the resources and reserve base and 41% of the reserves. The United States had about 12% of world resources, 9% of the reserve base, and 11% of the reserves.

Of an estimated 116,000 tons of gold mined in historical times through 1994, about 15% is believed to have been lost, used in dissipative industrial uses, or otherwise unrecoverable or unaccounted for. Of the remaining 99,000 tons, an estimated 35,000 tons are official stocks held by central banks, and about 64,000 tons are privately held as coin, bullion, and jewelry.

Production

Domestic mine production data for gold are developed by the USBM from two separate, voluntary surveys of U.S. operations. One of these surveys is the lode-mine production survey of copper, gold, lead, silver, and zinc mines. Of the lode gold producers in operation to which a survey request was sent 206 responded, representing 98% of the total gold shown in tables 1 and 2. The individual company production and performance data in this report were derived from published sources such as company annual reports.

Of the total gold produced during 1994, 93% was extracted from gold ore while the

remainder was derived from base metal and other precious metal ores and from placer deposits. By comparison, similar data assembled for 1980 indicated that gold ores provided 63% of the total gold produced and the remainder, 37%, was derived from base metal and other precious metal ores and placers. In both years, 1980 and 1994, the contribution from placer mines amounted to less than 2% of the total gold produced.

Alaska.—Gold developments in Alaska during 1994 were summarized in a report on Alaskan mining activity prepared by the Alaska State Division of Geology and Geophysical Surveys (DGGS),² in cooperation with the Alaska Department of Commerce and Economic Development. According to the DGGS, there were approximately 185 mechanized placer mines in operation during the year compared with 196 during 1993, and for the first time in 15 years, all of Alaska's gold production was derived exclusively from placer mines.

According to the DGGS, the 10 largest Alaskan gold mines accounted for 58% of 1994 production. The State reported that Silverado Mines Ltd. recovered a 41.3 ounce (1,285 gram) nugget at its underground placer operations at the Nolan Mine; the nugget was unofficially determined to be the 10th largest placer gold nugget recovered in Alaskan mining history.

Gold exploration and the development and permitting of new gold mines continued to increase in Alaska. Echo Bay Mines Ltd. continued exploration and development of the A-J Mine on the outskirts of Juneau and at its Kensington joint-venture project 115 kilometers (72 miles) north of Juneau. Amax Gold Inc. gained Federal permit approval for its Fort Knox Project 24 kilometers (15 miles) northeast of Fairbanks. On Ester Dome 13 kilometers (8 miles) northeast of Fairbanks, La Teko Resources Ltd. continued exploration of its True North property.

California.—California's largest gold mine, the McLaughlin Mine of Homestake Mining Co., processed oxide and sulfide ore mined by open pit methods to recover nearly 7.8 tons (250,453 ounces) of gold during 1994. The State's second-largest gold mine, Santa Fe Pacific Gold Corp.'s Mesquite Mine, produced 6.5 tons (207,508 ounces) of gold from open pit operations near Brawley in Imperial County. In

eastern Imperial County, Glamis Gold Ltd. produced gold by heap leaching at its Picacho Mine and conducted further exploration at its Imperial Project. Glamis, through its wholly owned Rand Mining Co., also produced gold at its Baltic and Yellow Aster Mines near Randsburg in Kern County. Other mines producing gold in Imperial County during the year included the American Girl Mine and Cactus Mine.

In eastern San Bernardino County near the Nevada/California State line, Viceroy Gold Corp. produced an estimated 5,200 kilograms (168,000 ounces) of gold at its new Castle Mountain Mine.

In the State's Mother Lode country, Sonora Mining Corp. completed mining operations at its Jamestown gold mine at Jamestown in Tuolumne County. In Calaveras County, FMC Gold Co. closed its Royal Mountain King Mine near Copperopolis. To the north, in Nevada County, Siskon Gold Corp. poured its first bar of gold at its new San Juan Mine, an underground placer operation located near Nevada City. Siskon also conducted exploration and permitting operations at its Big Horn Property in Los Angeles County.

In Lassen County, Lassen Gold Mining Inc., a subsidiary of Amax Gold Inc., completed a successful transition from milling to an all heap-leaching operation at its Hayden Hill Mine. Hayden Hill's production during 1994 was nearly 2,050 kilograms (65,785 ounces).

Montana.—According to an annual review of mining and mineral developments in the State, prepared by the Montana Bureau of Mines and Geology (MBMG),³ exploration activity, largely focused on gold, doubled in 1994. Of the mines producing gold in Montana during the year, three were owned and operated by Pegasus Gold Inc. They were: the Beal Mountain Mine in Silver Bow County, the Montana Tunnels Mine, a gold, lead, silver, and zinc mine in Jefferson County; and the Zortman Mine in Phillips County, the State's largest gold mine in 1994.

In midyear, unstable ground conditions led to the suspension of milling operations at Placer Dome's wholly owned Golden Sunlight Mine near Whitehall in Jefferson County. Remedial measures and repairs occupied most of the time remaining in 1994; full production was resumed in early February 1995.

In Park County, TVX Gold Inc. continued production at its underground Mineral Hill Mine near Jardine and exploration at its nearby Crevice Mountain project. Construction of a 4.3 kilometers (2.7 mile) tunnel connecting the two sites was begun during the year. Also in Park County, about 80 kilometers (50 miles) east of Mineral Hill, Crown Butte Resources

Ltd. continued to seek permits for its New World project near Cooke City. Plans for the controversial gold, copper, and silver project north of Yellowstone National Park call for underground mining and ore processing without the use of heap leaching or cyanide recovery methods.

Nevada.—Nevada maintained its long-standing position as the Nation's dominant gold-producing State. Thirteen of the Nation's top 25 gold producing mines during 1994 were in the Silver State.

Barrick Gold Corp., which for the first time became the Nation's largest gold mining company, recovered 57.5 tons (1.85 million ounces) of gold at its Betze-Post Mine in Eureka County. Nearby in Elko County, Barrick continued development of its Meikle Mine, a new underground operation scheduled to begin production during the second half of 1996. Barrick's operations on the Carlin Trend are developed within a 2,800 hectare (7,000 acre) land holding designated collectively as the Goldstrike Property. In late 1994, Barrick acquired full ownership of the Bullfrog Mine in Nye County. During the year Bullfrog produced just over 9,300 kilograms (300,000 ounces) of gold at the mine site near Beatty.

Nearby, both geographically and in terms of production, Newmont Gold Co. (NGC) produced 48.4 tons (1,555,300 ounces) of gold from its operations generally centered in Eureka and Elko Counties. NGC's widespread operations along the Carlin Trend are divided geographically into three management areas: the North Area, which includes the Post, Carlin, and Genesis Mines and mills No. 1 and No. 4; the South Area, which includes the Gold Quarry Mine and mills No. 2 and No. 5; and the Rain Area, which includes the Rain Mine and mill No. 3. Of the tonnage mined, mines in the North Area accounted for 50.7% of the total while 48.1% and 1.2% of the remainder was extracted from deposits in the South Area and the Rain Area, respectively. Of the total gold production reported for the year, 58% was derived by milling and the remainder, 42%, was recovered by heap leaching. During the year NGC completed construction of a new refractory ore treatment plant north of Carlin. Construction was also underway at yearend on an \$11 million bioleach demonstration project designed to process lower grade refractory ores.

Northwest of Elko, in Elko County, Independence Mining Co. and FMC Gold Co. produced about 10.2 tons (326,667 ounces) of gold at its Jerritt Canyon Mine. To the west, in Humboldt County, Santa Fe Pacific Gold Corp. (SFPG) recovered 15.6 tons (501,891 ounces) of gold at its Twin Creeks Mine and about 7.1 tons (226,911 ounces) at its Lone Tree Mine to

the south near Valmy. Both operations are open pits where gold is recovered by milling and heap leaching, respectively. Nearby, FirstMiss Gold Inc. produced nearly 7.6 tons (243,826 ounces) of gold at its Getchell Mine during the fiscal year ending in midyear. Other gold mines in Humboldt County include the Crowfoot/Lewis Mine, Marigold Mine, Pinson Mine, and Sleeper Mine.

South of and parallel to the Carlin Trend, the Battle Mountain/Eureka Trend runs from southeastern Humboldt County southeast through Eureka in Eureka County. Gold mining operations along this trend include the Battle Mountain Complex of Battle Mountain Gold Co. in Lander County, the McCoy/Cove gold and silver property of Echo Bay Mines Ltd., the Cortez Gold Mine Joint Venture's Cortez Mine, Atlas Corp.'s Gold Bar Mine, placed under temporary shutdown and standby in mid-1994, and Alta Gold Co.'s Easy Junior Mine in White Pine County. Considerable exploration activity continued to be focused on the Pipeline, Ruby Hill, and various other recent discoveries along the Battle Mountain/Eureka Trend in Lander and Eureka Counties.

At Round Mountain, in north-central Nye County, Round Mountain Gold Co. produced about 13.2 tons (423,504 ounces) of gold during the year, an increase of 13% over the previous year. All of the increase came from a new "dedicated" (permanent) heap-leach pad.

South Dakota.—Homestake Mining Company's nearly 12-decade-old Homestake Mine was again the Nation's largest underground gold mine, the largest gold-producing mine in South Dakota, and the sixth largest gold-producing mine in the country. During the year the mine at Lead, a nearly 2.5 kilometer (8,000 foot)-deep operation with associated surface mining, recovered about 12.3 tons (393,934 ounces) of gold at a reported cash production cost of \$292 per ounce. Performance for 1994 was impacted by a cave-in and a 100-year record rainstorm which also affected the performance of other Black Hills gold operations.

At Wharf Resources Ltd.'s Wharf Mine, west of Lead, production amounted to a record of nearly 3,300 kilograms (105,282 ounces). Nearby, the company's 60%-held Golden Reward Mine produced about 1,650 kilograms (52,556 ounces) of gold kilogram.

About 74 kilograms (2,400 ounces) of residual gold were recovered by re-leaching previously leached ore at Dakota Gold Mining Inc.'s Gilt Edge Mine near Deadwood. The company continued exploration and permitting at its Anchor Hill oxide deposit on the Gilt Edge property. Some residual gold also was

recovered at Barrick Gold's, formerly Lac Minerals Ltd.'s, Richmond Hill Mine where mining of ore ceased in mid-1992.

In the November elections the electorate of Lawrence County, host county for the aforementioned mines, defeated a ballot initiative to prohibit the issuance of new mining permits, or amendments to existing permits, for surface metal mining projects within designated areas of the County.

Utah.—Kennecott Corp.'s Bingham Canyon Mine, produced gold as a byproduct of its copper mining operations near Salt Lake City. Long ranked as one of the country's leading gold-producing mines, Bingham Canyon was the fourth largest gold producer during 1994. Kennecott also operated the nearby Barney's Canyon Mine, an open pit and heap-leaching operation.

Barrick Gold Corp.'s open pit Mercur Mine in Tooele County, Utah's largest primary gold producer, recovered about 3,360 kilograms (108,107 ounces) of gold in 1994. Mercur presently has a 5-year life remaining and is scheduled to begin closure in 3 years following depletion of all open pit reserves and reclamation of tailings from earlier mining.

USMX Inc. reported that its Goldstrike Mine in Washington County produced about 1,070 kilograms (34,486 ounces) of gold. Mining activities at the site were completed in late 1994. Reclamation of the remaining mining disturbances and residual production from ore in place on the heaps is expected to extend operations into late 1995. There was some gold exploration activity in the State during the year. Most of the activity was centered around former producing mines in the old Tintic Mining District.

World Review

For the first time following 15 consecutive years of growth, world mine production failed to exceed that of the previous year. Increasing production from mines in developing Nations was more than offset by a sharp decline in production from the Republic of South Africa. According to its annual review of world gold supply and demand, Gold Fields Mineral Services Ltd. (GFMS)⁴ calculated that total global supplies of gold in 1994 were balanced against total demand for gold at 3,319 tons (107 million ounces) compared with the previous year's total of 3,563 tons (about 115 million ounces). There were several important developments in the individual components of the supply/demand equation in 1994. The most significant development was a dramatic decline in net official/central bank sales of gold to the market; official sector sales declined from 445

tons (14 million ounces) in 1993 to 78 tons (2.5 million ounces) in 1994. Gold Fields noted that supplies of old scrap to market during 1994 rose to the highest level ever recorded in its annual surveys which record the contribution of scrap to the supply side as far back as 1980.

On the demand side of the equation, GFMS reported that the overall fabrication of gold into end products increased slightly from that of the previous year but failed to match the record demand level set in 1992. Gold used in the fabrication of jewelry products globally rose more than 2% to 2,576 tons (83 million ounces) and gold consumed in electronic products rose more than 5% to 192 tons (about 6 million ounces). Worldwide the use of gold in other demand sectors such as dentistry, medals and imitation coins, and other industrial and decorative applications increased slightly. The use of gold in the minting of official coins declined 41% from the 1993 level. GFMS's data on various facets of the gold investment sector indicated that gold supplies to the market from futures market vehicles, as well as gold calculated to have returned to the market because of disinvestment, more than offset the quantity of gold absorbed by gold loans and gold bars held for investment and hoarding purposes. Bar hoarding registered a substantial increase over quantities estimated to be held at the end of 1993.

Australia.—Australian gold production continued to expand and for the third consecutive year Australia retained its position as the world's third largest gold-producing nation. Of the 256 tons (8.2 million ounces) of gold produced in 1994, Western Australia, Queensland, and the Northern Territory accounted for about 76%, 13%, and 7%, respectively. Western Australia's production was derived primarily from mines situated around and west of Kalgoorlie. Other Australian gold-producing States, in descending order of output, were New South Wales, Victoria, Tasmania, and South Australia.

A number of gold mines were under development or expanding capacity and several new mines began production during the year. In Western Australia, for example, Great Central Mines NL began open pit production at its Bronzewing Mine near Wiluna, and Gold Mines of Australia Ltd. began underground operations at its Youanmi Mine northeast of Perth.

Canada.—Although Canada's gold production decreased for the third consecutive year, new mines under development at yearend 1994 should result, in later years, in a gradual recovery of production to levels seen prior to the decline, according to a review of Canadian gold developments prepared by the Canadian

Department of Energy, Mines and Resources.⁵

Canada retained its position as the world's fourth largest gold producer. In 1994, gold was produced at about 50 primary gold mines; these accounted for 91% of the total. Base metal mines and placer mines accounted for 6.5% and 2.5%, respectively, of the remainder. Canada's principal gold-producing regions, in descending order of output, were Ontario, Quebec, the Northern Territory, and British Columbia. Gold was also produced in Alberta, Manitoba, New Brunswick, and the Yukon.

Latin America.—Interest in gold exploration opportunities, new mine development activity, and production in many Latin American nations continued to increase during the year. Much of the activity was focused on Chile, Mexico, Peru, and to a lesser extent the Guyanan Shield area of Guyana and Venezuela. There also appeared to be increasing interest in the prospects for expanded gold production in other nations such as Argentina and the nations of Central America and the Caribbean, especially the Republic of Cuba.

Gold production in Brazil, Latin America's largest gold-producing nation, continued to decline as easily worked surface and placer deposits are mined out by independent gold miners or "garimpeiros." Yet to be reflected in Brazil's performance data is the trend toward rising gold production by the formal or corporate sector.

New mines completing a first full year of production included Bolivia's Kori Kolo, Chile's Guanaco, Guyana's Omai, Mexico's Amelia and Rio Yaqui, and Peru's Yanacocha. In Venezuela's El Dorado region, Monarch Resources Ltd. began production in midyear at its La Camorra Mine while in Panama, Greenstone Resources Ltd. began open pit mining at its Santa Rosa Mine and the Eldorado Corp. Ltd. began production at its La Colorada Mine in Mexico.

Oceania.—Gold production in Papua New Guinea declined for the second consecutive year reflecting to some extent the mining of lower grade ores at two of that nation's larger gold mines, Placer Pacific Ltd.'s Porgera and Misima Mines. Conversely, higher grade ores contributed to increased production at BHP Co. Ltd.'s Ok Tedi copper-gold mine. Exploration was continued at a number of gold prospects and in early 1995 the Government issued a Special Mining Lease to RTZ which opened the way for construction of the Lihir Island project off the east coast of New Ireland. Production was also scheduled to begin in 1995 at Dome Resources Ltd.'s Tolukuma project north of Port Moresby.

In Indonesia, gold production increased substantially. Freeport Indonesia Inc. recovered

more than 24 tons (784,000 ounces) of byproduct gold at its Grasberg/Ertsberg copper-gold mine in West Irian and PT Kelian Equatorial Mining recovered nearly 14 tons (433,000 ounces) of gold at the Kelian Mine in East Kalimantan. Several new Indonesian gold mines began production in 1994. Gold exploration activities continued to increase and several late-stage projects were being readied for production in the near future.

Gold production in New Zealand was derived from three large surface lode mines and several medium-sized placer mines. Underground mining continued on Fiji's Island of Viti Levu. Some gold exploration was conducted on Espiritu Santo in the Republic of Vanuatu, on New Caledonia, and in the Solomon Islands.

South Africa, Republic of.—During the 35 years prior to 1994 gold production in South Africa, the world's largest gold-producing nation, has ranged from a high of 1,000 tons (32 million ounces) in 1970 to low of 601 tons (19.2 million ounces) in 1991. In 1994, however, problems linked to the beginning of a new post-apartheid government, repeated labor disruptions, escalating costs, and declining ore grades combined to drive the production the lowest level since 1958 when only 549 tons (17.6 million ounces) were produced.

The tonnage and grade of ore milled during 1994 by the nearly 3 dozen mines representing the membership of the Chamber of Mines of South Africa amounted to nearly 99 million metric tons bearing a gold grade of 5.40 grams per ton (0.158 ounce per short ton); this compares with 103 million tons bearing 5.56 grams per ton (0.162 ounce per short ton) milled by Chamber members during the previous year.

The six major corporate groups or "houses" which dominate the South African gold mining industry were as follows: The Anglo American Corp. of South Africa Ltd. (AAC), Gold Fields of South Africa Ltd., Gencor Ltd., Johannesburg Consolidated Investment Co. Ltd., Anglovaal Ltd., and Rand Mines Ltd. The two largest gold mines in terms of production during 1994 were the Freegold and Vaal Reefs, both owned by AAC. The two next largest mines were the Driefontein and Kloof, both owned by Gold Fields.

Russia and the Former U.S.S.R.—Of the seven or more gold-producing independent countries resulting from the dissolution of the U.S.S.R. in late 1991, Russia is by far the largest, both in terms of output and number of operations as well as areal distribution. Much of Russia's production derives from State-owned enterprises and cooperatives, known as artels, scattered throughout eastern Russia.

Foreign corporate involvement in gold exploration, development and mining activity in the former Soviet Union continued to evolve during the year, but at a much lower pace than previously anticipated. Numerous North American, Australian, and European corporations continued to pursue joint-venture opportunities in Kazakhstan, Kyrgyzstan, and elsewhere throughout the former Soviet Union. By late 1994, the Zarafshan-Newmont Joint Venture had nearly completed the preproduction phase at its new gold recovery project at the Muruntau Mine in Uzbekistan; gold production began at a rate of 14 tons (450,000 ounces) per year in mid-1995.

Outlook

The course to be taken by the domestic gold mining industry depends to a large extent upon the outcome of the current legislative debate in the Congress. The effect of revisions to the General Mining Law, which governs mining and exploration on Federal lands, and proposals to impose additional tax and regulatory burdens on mine production from both Federal and non-Federal lands will largely determine the course of future domestic gold mining activity. If new legislation places unacceptable burdens on producers and reduces the incentive to explore, production could decline substantially as existing deposits are high-graded wherever possible, or reclassified as uneconomic, and producers, explorationists, and investors opt to pursue opportunities in more hospitable environments elsewhere.

What may be little understood and appreciated in the current debate is that modern metal mining has always been a high risk global pursuit driven by cyclical world market prices and by evolving geologic theories and the accessibility to favorable geologic terrain. The nature of the exploration process, the ability to pursue the development of favorable prospects once discovered, and the long lead times generally required to effect a return on investment are characteristics that must be taken into account whenever the future of the industry is considered.

The USBM released a comprehensive overview of the operation and economics of the gold mining industry worldwide.⁶ An overview of the economics and public policy issues affecting the domestic gold mining industry was published in early 1995.⁷ The Gold Institute forecasts world gold production to increase at a rate of about 1.6% annually through 1997.⁸

¹Ounce refers to troy ounce. One kilogram of gold weighs 32.1507 troy ounces.

²Swainbank, R. C., and T. K. Bundtzen. Alaska's Mineral Industry 1994: A Summary. AK Div. Geol. and Geophys. Surv. Inf. Circ. 40, Mar. 1995, 11 pp.

³McCulloch, R. Annual Mining Review Mining Eng., v. 47, No. 5, May 1995, pp. 440-441.

⁴Murray, S. K., K. Crisp, P. Klapwijk, T. Sutton-Pratt, and others. Gold 1995. Gold Fields Mineral Services Ltd. (London), May 1995, 64 pp.

⁵Couturier, G. Gold. Advance Copy of Ch. from Canadian Minerals Yearbook—1994. 21 pp.

⁶World Gold, A Minerals Availability Appraisal. U.S. Bureau of Mines Special Pub. SP 24-94, 1994. 197 pp.

⁷Dobra, J. L., and P. R. Thomas. The U.S. Gold Industry 1994. Nevada BuMines and Geol. Special Pub. 18, 1995. 32 pp.

⁸The Gold Institute. World Mine Production of Gold 1993-97. May 1994. 9 pp.

OTHER SOURCES OF INFORMATION

U.S. Bureau of Mines Publications

Gold. Sec. in Mineral Commodity Summaries, annual.

Precious Metals. Mineral Industry Surveys, monthly.

Other Sources

American Metal Market, New York.

Gold Technology, World Gold Council, New York and Geneva, Switzerland, quarterly.

Engineering and Mining Journal, Chicago.

Gold Bulletin, World Gold Council, New York and Geneva, Switzerland, quarterly.

Gold Notes & Quotes, World Gold Council, New York and Geneva, Switzerland, monthly.

Jewelers' Circular-Keystone, Radnor, PA.

Mining Journal, London.

Noble Metals. Time-Life Books Inc., New York.

Platt's Metals Week, New York.

Randol Mining Directory 1994-95, Randol Intl. Ltd., Golden, CO.

Russian Far East News, Alaska Center for International Business and American Russian Center, Univ. of Alaska, Fairbanks, AK, monthly.

The Metalsmiths. Time-Life Books Inc., New York.

The Mining Record, Englewood, CO.

The Northern Miner, Toronto.

TABLE 1
SALIENT GOLD STATISTICS 1/

		1990	1991	1992	1993	1994
United States:						
Mine production	kilograms	294,000	294,000	330,000	331,000	326,000
Value	thousands	\$3,640,000	\$3,430,000	\$3,660,000	\$3,840,000	\$4,040,000
Gold recovered by cyanidation:						
Extracted in vats, tanks, and closed containers 2/		136,000	160,000	178,000	177,000	169,000
Leached in open heaps or dumps 3/		129,000	104,000	120,000	128,000	119,000
Refinery production:						
Ores, concentrates and dore	kilograms	225,000	225,000	284,000	243,000	241,000
Recycled materials (new and old scrap)	do.	144,000	153,000	163,000	152,000 r/	148,000
Imports for consumption:						
Refined	do.	64,800	147,000	141,000	130,000	96,400
Exports						
Refined	do.	141,000	174,000	257,000	658,000	334,000
Net deliveries from foreign stocks in						
Federal Reserve Bank of New York	do.	51,500	61,600	136,000	582,000	217,000
Stocks, Dec. 31:						
Industry 4/		37,100	39,400	36,700	34,400 r/	32,700
Commodity Exchange (Comex) 5/	do.	50,900	49,900	46,500	78,500	49,100
Department of the Treasury 6/	metric tons	8,150	8,150	8,150	8,140	8,140
Volume of U.S. Gold Futures Trading 7/	do.	30,300	21,200	18,700	25,500	26,400
Department of the Treasury: 8/						
American Eagle gold coin 9/	kilograms	17,400	13,700	11,100	21,800	NA
Other Numismatic gold coins	do.	695	952	965	2,250	NA
Consumption in industry and the arts	do.	118,000	114,000	110,000	91,400 r/	76,100
Apparent demands, refined 10/	do.	244,000	307,000	357,000	363,000	294,000
Price: Average per troy ounce 11/		\$384.93	\$363.29	\$344.97	\$360.91	\$385.41
Employment, mine and mill only 12/		16,100	15,100	14,800	14,700	14,200
World:						
Production, mine	kilograms	2,180,000	2,190,000	2,290,000 r/	2,310,000 r/	2,290,000
Official bullion reserves 13/	metric tons	35,600	35,500 r/	35,200 r/	34,700 r/	34,500

r/ Revised. NA Not available.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits.

2/ May include small quantities recovered by gravity methods.

3/ May include tailings, waste ore dumps and previously mined ore at some inactive mines.

4/ Unfabricated refined gold held by refiners, fabricators, dealers, and U.S. Department of Defense.

5/ Comex division of New York Mercantile Exchange.

6/ Includes gold in Exchange Stabilization Fund.

7 /Comex only.

8/ Sales to market fiscal year 1990; thereafter, bullion disbursements to U.S. Mint coin programs. Fiscal year begins Oct. 1, of year prior to year indicated.

9/ Sales program began Oct. 20, 1986.

10/ Defined as refinery production from primary materials + refinery production from old scrap + net bullion flow to market from foreign stocks at the New York Federal Reserve Bank + net imports of bullion. Assumed to include gold held for investment purposes. Excludes gold contained in fabricated items, imported coins, and official monetary gold.

11/ Engelhard Industries quotation.

12/ Source: Mine Safety and Health Administration.

13/ Held by central banks and governments and international monetary organizations. Source: International Monetary Fund.

TABLE 2
MINE PRODUCTION OF GOLD IN THE UNITED STATES, BY STATE 1/ 2/

(Kilograms)

State	1993	1994
Alaska	2,780 3/	5,740 4/
Arizona	2,710	1,980
California	35,800	30,100
Colorado	W	4,420
Montana 5/	14,300	12,600
Nevada	211,000	214,000
New Mexico	995	W
South Dakota	19,200	W
Washington	7,110	7,410
Other States 6/	37,300	50,100
Total	331,000	326,000

W Withheld to avoid disclosing company proprietary data; included in "Other States."

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Beginning with calendar year 1994 the U.S. Bureau of Mines ceased collecting data on placer mine production. Placer mine data from other sources is footnoted.

3/ This figure, reported to the U.S. Bureau of Mines, probably understates production. Data collected by the State indicates 1993 production was 5,948 kilograms.

4/ Production data collected by the State. Data published in this table in prior years was Bureau of Mines data only; State-sourced data was appended as a footnote.

5/ In addition to reported data shown in the table, placer production was estimated by the State to have been as follows in kilograms: 1993--6; 1994--12.

6/ Includes for at least one of the years Idaho, Oregon, South Carolina, Utah, Wisconsin, and withheld placer data from other states where available.

TABLE 3
 TWENTY-FIVE LEADING GOLD-PRODUCING MINES IN THE UNITED STATES IN 1994, IN ORDER OF OUTPUT

Rank	Mine	County and State	Operator	Source of gold
1	Goldstrike	Eureka, NV	Barrick Goldstrike Mines Inc.	Gold ore.
2	Carlin Mines Complex	do.	Newmont Gold Co.	Do.
3	Twin Creeks	Humboldt, NV	Santa Fe Pacific Gold Corp.	Do.
4	Bingham Canyon	Salt Lake, UT	Kennecott-Utah Copper Corp.	Copper ore.
5	Smokey Valley Common Operation	Nye, NV	Round Mountain Gold Corp.	Gold ore.
6	Homestake	Lawrence, SD	Homestake Mining Co.	Do.
7	Jerritt Canyon (Enfield Bell)	Elko, NV	Independence Mining Co. Inc.	Do.
8	Bullfrog	Nye, NV	LAC Minerals	Do.
9	McCoy and Cove	Lander, NV	Echo Bay Mining Co.	Do.
10	McLaughlin	Napa, CA	Homestake Mining Co.	Do.
11	Getchell	Humboldt, NV	FMG Inc.	Do.
12	Mesquite	Imperial, CA	Santa Fe Pacific Gold Corp.	Do.
13	Castle Mountain	San Bernardino, CA	Viceroy Gold Corp.	Do.
14	Lone Tree	Humboldt, NV	Santa Fe Pacific Gold Corp.	Do.
15	Cannon	Chelan, WA	Asamera Minerals (U.S.) Inc.	Do.
16	Denton-Rawhide	Mineral, NV	Kennecott Rawhide Mining Co.	Do.
17	Zortman-Landusky	Phillips, MT	Pegasus Gold Inc.	Do.
18	Wharf	Lawrence, SD	Wharf Resources LTD	Do.
19	Ridgeway	Fairfield, SC	Kennecott Ridgeway Mining Co.	Do.
20	Florida Canyon	Lander, NV	Pegasus Gold Inc.	Do.
21	Barney's Canyon	Salt Lake, UT	Kennecott Corp.	Do.
22	Crofoot-Lewis	Humboldt, NV	Hycroft Resources & Development Corp.	Do.
23	Mercur	Tooele, UT	Barrick Goldstrike Mines Inc.	Do.
24	Yellow Aster	Kern, CA	Glamis Gold Inc.	Do.
25	Bald Mountain	White Pine, NV	Placer Dome (U.S.) Inc.	Do.

TABLE 4
U.S. CONSUMPTION OF GOLD 1/ 2/, BY END-USE SECTOR

(Kilograms)

End use	1993	1994
Jewelry and the arts:		
Karat gold	61,700 r/	49,700
Fine gold for electroplating	373 r/	369
Gold-filled and other	3,530	3,650
Total	65,600 r/	53,700
Dental	6,170	5,430
Industrial:		
Karat gold	1,100	96
Fine gold for electroplating	9,090	9,470
Gold-filled and other	9,470	7,450
Total	19,700	17,000
Small items for investment 3/	--	--
Grand total	91,400 r/	76,100

r/ Revised.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Gold consumed in fabricated products only; does not include monetary bullion.

3/ Fabricated bars, medallions, coins, etc.

TABLE 5
U.S. EXPORTS OF GOLD, BY COUNTRY 1/ 2/

Year and country	Ores and concentrates 3/		Dore and precipitates		Refined bullion		Total		Waste and scrap	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
1993	216	\$1,880	67,500	\$686,000	658,000	\$7,610,000	726,000	\$8,300,000	66,800 4/	\$616,000
1994:										
Argentina	--	--	--	--	285	3,480	285	3,480	--	--
Belgium	--	--	--	--	--	--	--	--	2,660	33,600
Brazil	--	--	--	--	255	3,120	255	3,120	--	--
Canada	414	3,390	15,500	120,000	2,900	33,200	18,800	156,000	33,600	270,000
China	--	--	9	115	636	8,000	645	8,120	--	--
France	--	--	30,300	377,000	--	--	30,300	377,000	5,020	61,700
Germany	--	--	40	141	13,200	166,000	13,300	167,000	5,580	65,400
Hong Kong	--	--	628	7,870	64,700	795,000	65,300	803,000	2	13
Ireland	--	--	--	--	793	12,000	793	12,000	5	66
Italy	--	--	3	25	12	93	15	118	351	4,330
Japan	--	--	529	6,400	1,590	19,100	2,120	25,500	90	1,370
Korea, Republic of	--	--	185	2,310	2,070	25,400	2,260	27,700	1	7
Mexico	--	--	20	251	7,940	96,100	7,960	96,300	--	--
Peru	--	--	--	--	294	3,610	294	3,610	7	89
Singapore	--	--	--	--	1,500	18,200	1,500	18,200	60	568
Sweden	--	--	--	--	--	--	--	--	998	12,600
Switzerland	--	--	9,190	113,000	95,000	1,130,000	104,000	1,240,000	7,650	64,400
Taiwan	--	--	--	--	32,500	404,000	32,500	404,000	--	--
Turkey	--	--	--	--	429	5,250	429	5,250	--	--
United Arab Emirates	--	--	--	--	707	8,690	707	8,690	--	--
United Kingdom	36	360	4,140	49,700	109,000	1,330,000	113,000	1,380,000	20,200	229,000
Other	12	29	20	158	324	3,870	356	4,060	95	1,170
Total	462	3,780	60,600	677,000	334,000	4,060,000	395,000	4,740,000	76,300	745,000

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

3/ Includes base metal ores, concentrates, and matte destined for refining.

4/ Verification of Bureau of the Census export quantities was not possible for some months of 1993. Quantities shown are rounded estimates derived by dividing dollar values, which are believed to be accurate, by an estimated value for waste and scrap of \$9,400/kg.

Source: Bureau of the Census.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF GOLD, BY COUNTRY 1/ 2/

Year and country	Ores and concentrates 3/		Dore and precipitates		Refined bullion		Total		Waste and scrap	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
1993	1,240	\$13,500	12,500	\$135,000	130,000	\$1,500,000	144,000	\$1,640,000	25,500	\$65,400
1994:										
Argentina	--	--	--	--	117	1,560	117	1,560	1,060	15,700
Bolivia	--	--	--	--	711	8,600	711	8,600	14	101
Brazil	--	--	--	--	3,370	42,000	3,370	42,000	6	42
Canada	3	35	11,400	132,000	73,900	913,000	85,300	1,040,000	2,740	21,600
Chile	--	--	283	3,500	7,300	90,600	7,590	94,100	13	143
Colombia	--	--	67	494	1,900	20,300	1,960	20,800	14	176
Costa Rica	--	--	326	4,080	3	42	329	4,120	487	4,060
Dominican Republic	--	--	--	--	43	455	43	455	3,410	21,500
Ecuador	--	--	104	1,260	2,840	29,100	2,940	30,300	55	557
Guyana	--	--	--	--	174	2,180	174	2,180	636	7,490
Malaysia	--	--	--	--	--	--	--	--	1,350	2,150
Mexico	2,240	27,300	2,120	25,900	1,080	12,800	5,450	66,000	2,080	11,800
Panama	--	--	549	3,670	224	2,080	773	5,750	211	604
Peru	--	--	168	2,060	476	5,820	644	7,880	7,410	8,120
Philippines	--	--	--	--	--	--	--	--	736	336
Suriname	--	--	--	--	59	702	59	702	321	3,880
Switzerland	--	--	--	--	2,220	28,500	2,220	28,500	9	59
Trinidad and Tobago	--	--	--	--	17	199	17	199	538	7,330
United Kingdom	1	8	--	--	1,140	15,600	1,140	15,600	14	152
Uruguay	--	--	--	--	201	2,480	201	2,480	--	--
Venezuela	--	--	1	12	223	2,300	224	2,310	3	38
Other	--	--	113	1,160	319	3,250	432	4,400	687	5,330
Total	2,250	27,300	15,100	174,000	96,400	1,180,000	114,000	1,380,000	21,800	111,000

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

3/ Includes base metal ores, concentrates, and matte destined for refining.

Source: Bureau of the Census.

GOLD: WORLD MINE PRODUCTION BY COUNTRY 1/ 2/

(Kilograms)

Country	1990	1991	1992	1993	1994 e/
Argentina	1,400 r/	1,730 r/	1,110 r/	937 r/	1,000
Armenia e/	XX	XX	500 r/	500	500
Australia	244,000	234,000	243,000 e/	247,000	256,000 3/
Belize e/	1 3/	5	5	2	2
Bolivia	5,200	3,500	4,690	10,400 r/	12,800 3/
Botswana	46	20	165	192	200
Brazil 4/	102,000	89,600 r/	85,900	74,200 r/	76,000
Burkina Faso e/	7,800	5,600	5,400	5,000	6,000
Burundi e/	9 3/	25	32	20	20
Cameroon e/	10 3/	10	10	10	10
Canada	169,000	177,000	161,000	153,000	146,000 3/
Central African Republic	241	176	155	150 e/	150
Chile	27,500	28,900	33,800	33,600 r/	38,600 3/
China e/	100,000	120,000	140,000	160,000	160,000
Colombia	29,400	34,800	32,100	27,500 r/	27,500 3/
Congo	7	12	5	5 e/	5
Costa Rica e/	460	550	550	600	650
Cote d'Ivoire	20	1,100	1,500	1,500 e/	1,500
Dominican Republic	4,350	3,160	2,380	1,500 r/ e/	1,300
Ecuador 5/	10,700	12,200	1,310 r/	940 r/	1,500 3/
Ethiopia 6/	848	3,040	2,220	3,390 r/	3,300
Fiji	4,120	2,740 r/	3,700 r/	3,780	3,440 3/
Finland	2,810	2,200	1,600	1,390 r/	1,380 3/
France	5,430 r/	4,610 r/	3,060 r/	2,160 r/ e/	3,800
French Guiana (Guyane)	870	1,420	2,140 r/	2,500 r/	2,500
Gabon 5/	80 e/	50	70	120	72
Georgia e/	XX	XX	1,500 r/	1,000 r/	600
Germany:					
Eastern states	1,750	XX	XX	XX	XX
Western states e/	18	XX	XX	XX	XX
Total	1,770	10 e/	--	--	--
Ghana	16,800	26,300	31,000	39,200	44,500 3/
Guatemala	62	31	32	30 e/	30
Guinea 7/	6,340	4,450	2,110	2,100 e/	2,100
Guyana e/	1,500	1,840	2,480	9,610	11,800 3/
Honduras	156	180	163	111 r/	106 3/
Hungary e/	600	500	500	500	200
India 8/	1,980	1,970	1,760 r/	2,000 r/	2,150
Indonesia 9/	11,200	16,900	38,000	42,100	45,000
Iran e/	500	500	500	417 3/	723 3/
Japan	7,300	8,300	8,890	9,350 r/	9,550 3/
Kazakhstan e/	XX	XX	24,000	25,000	26,000
Kenya e/	25 3/	20	20	20	20
Korea, North e/	5,000	5,000	5,000	5,000	5,000
Korea, Republic of 8/	20,800	20,800	23,300	25,000 e/	25,000
Kyrgyzstan e/	XX	XX	1,200 r/	1,500 r/	2,000
Liberia e/ 10/	600	600	700	700	--
Madagascar e/	216 3/	200	200	200	200
Malaysia	2,590	2,780	3,510	4,460	4,080 3/
Mali e/ 11/	5,200	4,900	5,700	5,500	5,500
Mexico	9,680	10,100	9,890	11,100 r/	13,900 3/
Mongolia e/	1,000	800	900	1,200 r/	2,000
Mozambique	63	394	296	149	336 3/
Namibia	1,610	1,860	2,030	1,950	2,450 3/
New Zealand	4,630	6,760	10,500	11,200 r/	12,000
Nicaragua	1,200 e/	1,150	1,320	1,240 r/	1,070 3/
Panama	85	194	250	255 e/	245
Papua New Guinea	31,900	60,800	71,200	60,600	59,300 3/
Peru 5/	9,100 e/	9,930	20,600 r/	23,100 r/	25,000 3/
Philippines	24,600	25,900	22,700	15,800	14,600 3/
Poland e/	30,000	30,000	30,000	30,000	30,000
Portugal e/	350	160	89	--	--
Romania e/	3,000	3,000	3,700	3,000	4,000
Russia	XX	XX	146,000	150,000	147,000 3/

See footnotes at end of table.

TABLE 7--Continued
GOLD: WORLD MINE PRODUCTION BY COUNTRY 1/ 2/

(Kilograms)

Country	1990	1991	1992	1993	1994 e/
Rwanda e/	2,160 3/	1,000	1,000	1,000	100
Saudi Arabia	3,540	4,780	6,150	7,520 r/	8,000
Serbia and Montenegro 12/	XX	XX	7,330	3,330	4,000
Sierra Leone 13/	32	26	92	157	123 3/
Solomon Islands e/	35	30	25	20	5
South Africa, Republic of	605,000	601,000	614,000	619,000	580,000 3/
Spain	6,810	7,400	6,580	6,080 r/	6,000
Sudan e/	100	50	1,000	1,600	2,500
Suriname e/	30	30	300	300	300
Sweden	6,330	6,250	6,160 r/	6,550 r/	6,500
Taiwan 8/	72	--	--	--	--
Tajikistan e/	XX	XX	1,700 r/	1,600 r/	1,500
Tanzania e/	3,500	4,200	6,000	6,000	6,000
Turkey e/ 14/	1,010	970	1,120	1,250	1,250
U.S.S.R. 15/	302,000	260,000	XX	XX	XX
United States	294,000	294,000	330,000	331,000	326,000 3/
Uruguay e/	--	--	--	300	300
Uzbekistan e/	XX	XX	75,000 r/	75,000 r/	75,000
Venezuela	7,700	4,220	7,550	8,710	9,940 3/
Yugoslavia 12/ 16/	8,170 r/	6,920 r/	XX	XX	XX
Zaire e/	9,300	8,800	7,000	6,000	1,080 3/
Zambia 17/	129	136	271	235 r/	210
Zimbabwe	16,900	17,800	18,300	18,900	20,500 3/
Total	2,180,000 r/	2,190,000 r/	2,290,000 r/	2,310,000 r/	2,290,000

e/ Estimated. r/ Revised. XX Not applicable.

1/ Previously published and 1994 data have been rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Table contains data available through July 20, 1995.

3/ Reported figure.

4/ Officially reported figures are as follows, in kilograms: Major companies: 1990--30,100; 1991--34,100; 1992--39,000; 1993--39,900; and 1994--45,000 (estimated). Garimpos 1990--71,800; 1991--55,500; 1992--46,800; 1993--34,300; and 1994--31,000 (estimated).

5/ Does not include undocumented production from small artisanal production.

6/ Year ending July 7 of year stated.

7/ Figures include reported Société Aurifère de Guinée (SAG) mine production of, in kilograms: 1990--1,750; 1991--1,450; 1992--1,110; and 1993--500 (estimated). Remainder represents approximate reported sales to Government, of artisanal production. Figures do not include artisanal production smuggled out of the country. In 1994, the SAG mine was closed.

8/ Refinery output.

9/ Excludes production from so-called people's mines, which may be as much as 18,000 kilograms per year, but includes gold recovered as byproduct of copper mining.

10/ These figures are based on gold taxed for export and include gold entering Liberia undocumented from Guinea and Sierra Leone.

11/ Includes estimates of artisanal production and may include some gold smuggled into Mali. The Kalana Mine accounted for about 8% in 1990; about 2% in 1991; less than 1% in 1992; and none from 1993-94. The Syama Mine began gold production in 1990 and accounted for about 42% of the total output that year, 49% in 1991; 57% in 1992; 56% in 1993; and 55% in 1994.

12/ All production in Yugoslavia from 1990-91 came from Serbia and Montenegro.

13/ Data are based on official exports and do not reflect gold moved through undocumented channels.

14/ Indicates byproduct of base metals.

15/ Dissolved in Dec. 1991.

16/ Dissolved in Apr. 1992.

17/ Year beginning Apr. 1 of year listed. Byproduct of copper production by Zambia Consolidated Ltd. only. Some additional artisanal production was reported but data are insufficient to make a reliable estimate.